Port of Seattle

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FILE COPY

May 29, 1986

Mr. Dan Cargill
Washington Department of Ecology
4350 - 150th Ave. N.E.
Redmond, WA 98052DOE

Dear Mr. Cargill:

Re: Previous Groundwater Testing at Terminal 91

Attached are two items:

A. Report from Hart-Crowser, dated August, 1981, regarding the initial installation and limited testing of two wells adjacent to the south side of the tank farm at Terminal 91.

B. Report from Laucks Testing Laboratories, dated January, 1985, with results of more detailed testing of water from the same wells.

Please get in touch with Bob Wells at 728-3193 if you have questions or concerns regarding this information. We are particularly interested, as is Chempro, in participating in any follow-up site visits or other discussions that you may wish to have.

Sincerely,

Walter D. Ritchie

Walter D. Ritchie
Chief Engineer

RW:sc
8476E

Attachments

cc: ~~Ron West - Chempro~~
Wells - POS

RECEIVED
MAR 02 1987
HELLER, EHRMAN

P.O. Box 1209
Seattle, WA 98111 U.S.A.
(206) 728-3000
Telex 703433

J-1039-01

HART CROWSER & associates inc.
GEOTECHNICAL ENGINEERING

August 21, 1981

RECEIVED
ENGINEERING

Port of Seattle
P.O. Box 1209
Seattle, Washington 98111

Attn: Mr. Curt Ratcliffe

Re: Subsurface Explorations and Testing
Related to Possible Oil Contamination
Terminal 91

Gentlemen:

This letter presents the results of our subsurface explorations related to possible oil contamination of soil and groundwater adjacent to the Chem-Pro facilities within the Terminal 91 area of the Port of Seattle. The proposed work was authorized as an extension of our consultant agreement with the Port of Seattle, No. P-03166.

The work to be completed was described in a Hart-Crowser & Associates proposal P-1039-01 dated June 30, 1981. The work completed includes:

1) Drilling and soil sampling of two hollow-stem auger borings,

2) Installation and development of 1½" PVC observational/sampling wells within the borings,

3) Groundwater sampling,

4) Analysis for oil of selected soil samples (total of 6) and groundwater samples (total of 4).

This report has been prepared for the exclusive use of the Port of Seattle for specific application to the project site in accordance with generally accepted hydrogeological practice. No other warranty expressed or implied is made.

Soil Sampling and Monitoring Well Installation

Two drilling locations were selected on the probable down gradient side of the Chem-Pro facilities (Figure 1). Drilling, well installation and development were completed on July 20, 1981 using a hollow-stem auger. Before drilling started at each location the auger flights, rods and split-spoon sampler were steamed cleaned to reduce the possibility of oil contamination from drilling.

Boring B-101 and B-102 were drilled to depths of 19 and 14 feet respectively, (Figures 2 and 3). Soil samples were taken at 2.5 foot intervals and placed in glass jars. At each boring location a medium dense, damp to wet, clean to silty, fine to medium SAND was encountered. Groundwater was encountered during drilling at a depth of approximately 7.0 feet in both borings. The water level in the observation wells could fluctuate 5 or more feet in response to tides, precipitation, etc. During drilling of B-101 a strong "hydrocarbon" odor was detected at 2.0 feet and between depths of approximately 6.0 to 12.0 feet. Three soil samples from each boring were analyzed for oil. The depths of the samples are shown on Figures 2 and 3, and the results are discussed in a following section.

After the final depth of the boring was reached the borings were converted into sampling wells using 1½" PVC screen (10-slot screen) and riser pipe. The well was then developed using compressed air until the water cleared.

Soil and Water Oil Analyses

A total of six soil samples were submitted to Lauck's Testing Laboratories of Seattle for gravametric oil analyses. The results are tabulated below:

Sample No.	Depth	Oil Concentration (milligrams/kilogram)
Boring B-101		
S-2	2.5-4.0	2600
S-4	7.5-9.0	3900 = 0.4%
S-7	15.0-16.5	230
Boring B-102		
S-2	2.5-4.0	110
S-4	7.5-9.0	330
S-6	10.0-11.5	160

Water samples were taken from each well on August 6 and August 13, 1981. Three casing volumes were pumped prior to taking a sample. Each sample was pumped directly into a glass jar containing a sulfuric acid perservative (to adjust pH) and delivered to Lauck's Testing Laboratories for oil analysis. All four samples displayed oil concentrations less than 5 ppm (the lower detection limit for the gravimetric analytical technique).

Discussion and Conclusions

Once oil has infiltrated into the ground it will migrate to the water table and move laterally downgradient. As oil moves through the soil it adheres to soil particles which tends to reduce the rate and distance of oil movement. Because oil is generally immersible in water and adheres to the soil grains, soil analyses are generally more representative of ground conditions related to oil.

immiscible

The soil analyses for B-101 (S-2 and S-4) indicate that oil has migrated to the water table in the vicinity of the southeast corner of the Chem-Pro facilities but that oil concentrations (of soil) are lower by an order of magnitude 5 to 7 feet below the water table (S-7). The result from S-7 (230 mg/kg) may reflect "natural" oil concentrations caused by depositional processes and decomposition of organic material. Sample S-4 was taken below the observed water table where large amounts of oil would not be expected. Oil has probably migrated below a depth of 7.0 feet because of water table fluctuation.

The soil analyses for B-102 (S-2, S-4, S-6) indicate that significant volumes of oil have not migrated to the water table in the area of the southwest corner of the Chem-Pro facilities. The results ranging from 110 to 330 mg/kg again may reflect "natural" conditions.

Analyses of groundwater samples from B-101 and B-102 (less than 5 ppm oil) reflects the immiscibility of oil with water and the ability of oil to adhere to soil grains. However, lower concentrations of the more soluble portion of the "hydrocarbon" mix may be present. The gravimetric analytical technique has a lower detection limit of 5 ppm and is generally most suitable for analyzing the heavier oil types.

The current study suggests that a major oil-groundwater contamination problem does not exist in the vicinity of the Chem-Pro facilities. Oil contamination of soil above and within the zone of water table fluctuation has probably occured elsewhere on the facility and it is probable that a thin zone of water (at the water table) would display higher water oil concentration than those contained in this study, if detailed sampling were performed. However, it is also probable that water concentrations would be significantly below soil concentrations.

We appreciate the opportunity of providing these hydrogeological services to you. Any questions you may have concerning the study can be addressed at your earliest convenience.

Sincerely,

HART-CROWSER & ASSOCIATES, INC.

Matthew G Dalton

MATTHEW G. DALTON
Sr. Project Hydrogeologist

Dennis R. Stettler

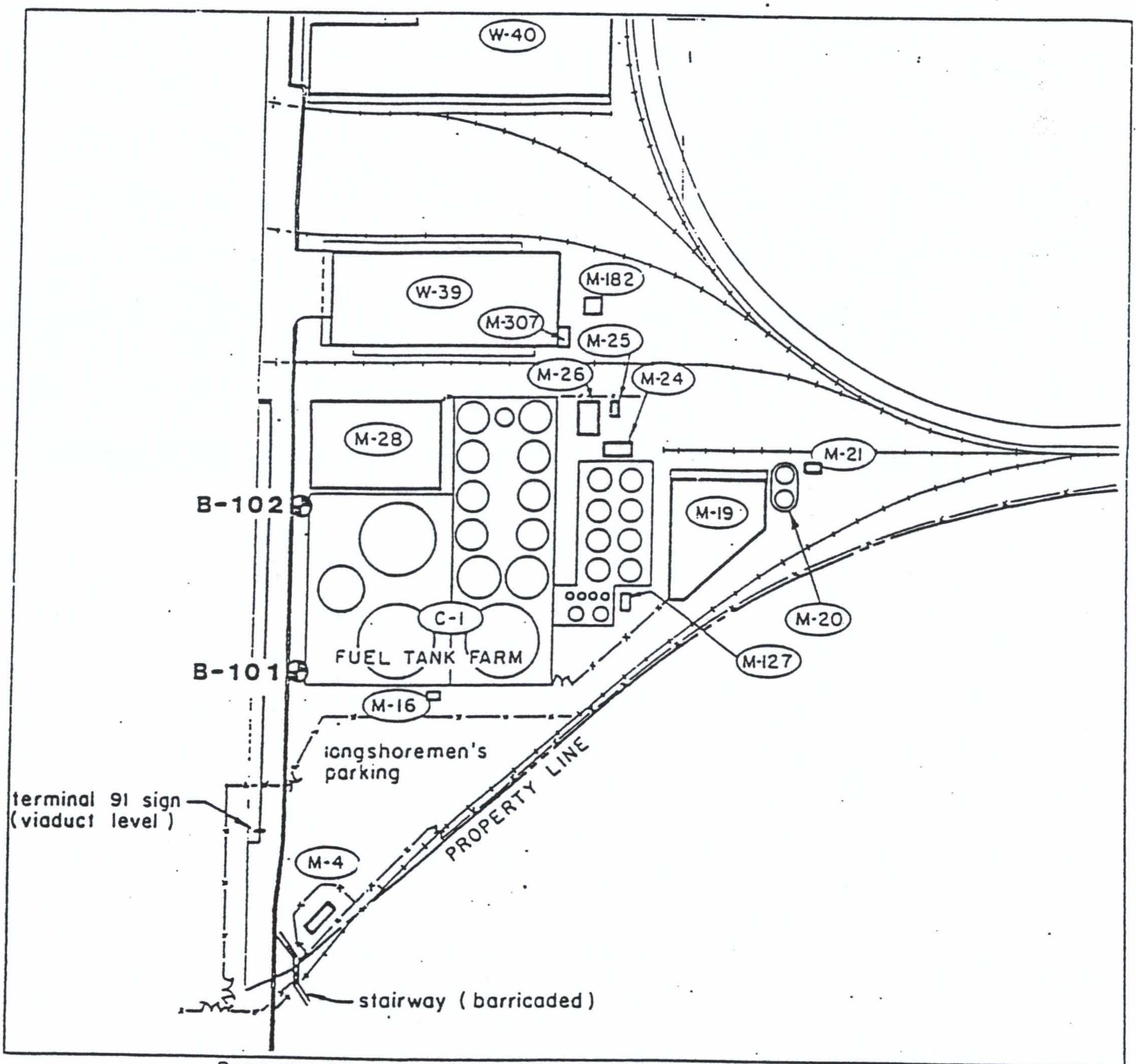
DENNIS R. STETTLER, P.E.
Principal Engineer

DENNIS R. STETTLER
STATE OF WASHINGTON
REGISTERED
PROFESSIONAL ENGINEER

MGD/DRS:lk

Enclosures: Figure 1 - Site and Exploration Plan
Figures 2 and 3 - Boring Logs B-101 and B-102
Lauck's Testing Laboratories Certificates on
Soil and Water Analyses (3 pages)

Site and Exploration Plan



Base map taken from Port of Seattle, Terminal 91 (Pier 90, Pier 91, North Half) ,#MF-22.

B-101 Boring Number and Approximate Location

N

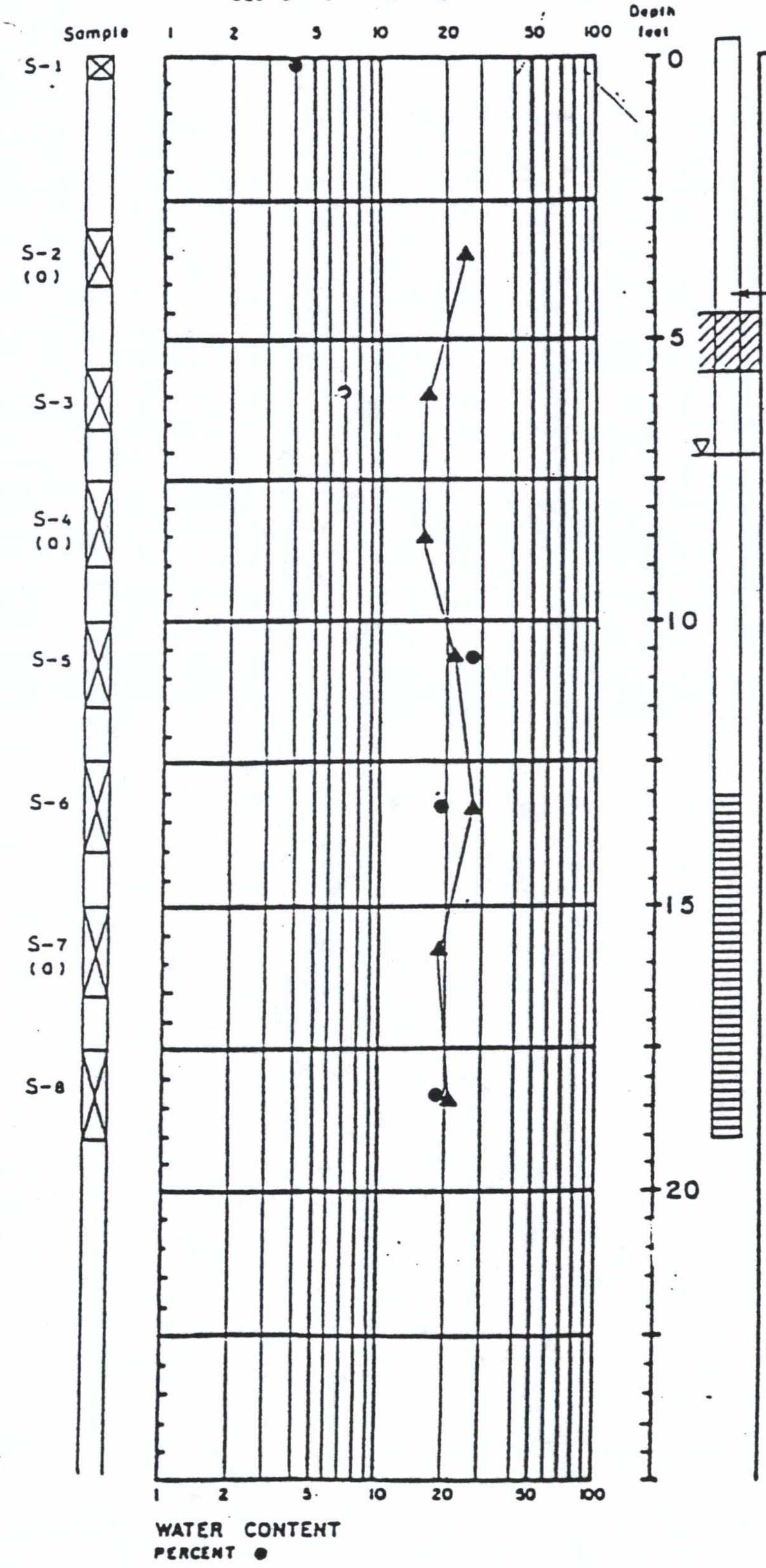
0 150 300 450
SCALE IN FEET

J-1039-01 August 1981
HART-CROWSER & associates inc.

BORING LOG B-10

STANDARD PENETRATION RESISTANCE
(140 pound weight, 30 inch drop)
BLOWS PER FOOT ▲

SOIL INTERPRETATION



APPROXIMATE ELEVATION 18 - 19 FEET.

ASPHALT

MEDIUM DENSE, DAMP, GRAY FINE TO MEDIUM SAND WITH SHELL FRAGMENTS (STRONG HYDROCARBON ODOR AT 2 FEET).

1 1/2 INCH PVC WITH 5 FEET OF 1 1/2 INCH 10 SLOT PVC SCREEN.

AT 6.0 TO 6.5 FEET BLACK COLOR.

GRADES TO MEDIUM DENSE, WET, SLIGHTLY SILTY TO SILTY FINE TO MEDIUM SAND WITH SHELL FRAGMENTS.

NOTE: A HYDROCARBON ODOR WAS NOTED WHILE DRILLING THE 19 FEET. THE ODOR WAS STRONGEST FROM APPROXIMATELY 6.0 TO 12.0 FEET.

PEAT NOTED FROM 16.5 TO 17 FEET.

BOTTOM OF BORING AT 19 FEET.
COMPLETED 7/20/81.

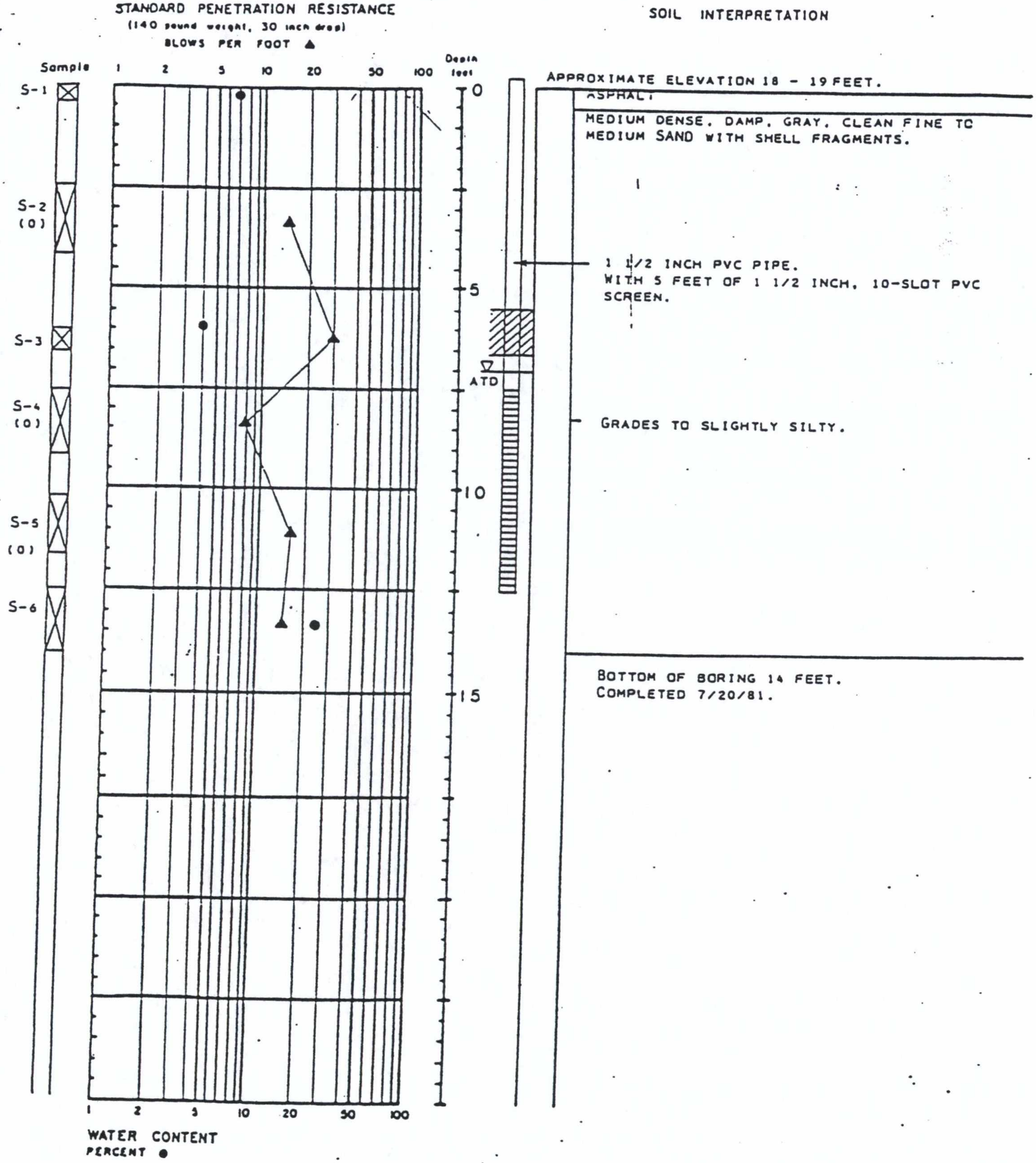
LEGEND

2" O.D. Split Spoon Sample	Bentonite Seal	Liquid Limit
3" O.D. Shelby Sample	ATD Water Level (At Time of Drilling)	Plastic Limit
* No Sample Recovery	Observation Well	PP Pocket Penetrometer (tsf)
		tv Torvane (tsf)

NOTE: Soil descriptions are interpretive and actual changes may be gradual.

J-1039-01 August 1981
HART-CROWSER & associates Inc.
Figure 2

BORING LOG B-1[illegible]2



LEGEND

- 2" O.D. Split Spoon Sample
- 3" O.D. Shelby Sample
- ● No Sample Recovery
- Bentonite Seal
- ATD Water Level (At Time of Drilling)
- Observation Well
- Liquid Limit
- Plastic Limit
- pp Pocket Penetrometer (tsf)
- tv Torvane (tsf)

NOTE: Soil descriptions are interpretive and actual changes may be gradual.

J-1039-01 August 1981

HART-CROWSER & associates inc.

Figure 3

Laucks
Testing Laboratories, Inc.
1008 Western Avenue, Seattle, Washington 98104 (206)622-0727
Chemistry, Microbiology, and Technical Services

Certificate

CLIENT Hart Crowser & Associates, Inc.
1910 Fairview Avenue East
Seattle, WA 98102

LABORATORY NO. 74364

DATE August 17, 1

REPORT ON WATER Job J1039-01

SAMPLE INDENTIFICATION Marked: 1. East Well B101
2. West Well B101

TESTS PERFORMED AND RESULTS.

	1	2
Gravimetric Oil and Grease, parts per million	Less/5	Less/5

JMO:mjt

RESPECTFULLY SUBMITTED,
Laucks Testing Laboratories, Inc.

Laucks
Testing Laboratories, Inc.
1008 Western Avenue Seattle Washington 98104 (206)622-0727
Chemistry Microbiology and Technical Services

707-6050

Certificate

CLIENT Hart Crowser & Associates, Inc.
1910 Fairview Avenue East
Seattle, WA 98102
Attn: Matt Dalton

LABORATORY NO. 74433

DATE August 17,

REPORT ON WATER

SAMPLE INDENTIFICATION

Marked:	1.	Pier 91	B-10~~3~~ 2	Aug 13	11:20 am
	2.	Pier 91	B-101	Aug 13	11:45 am

TESTS PERFORMED AND RESULTS.

	1	2
Gravimetric Oil & Grease, parts per million	Less/5	Less/5

JMO:mjt

RESPECTFULLY SUBMITTED.
Laucks Testing Laboratories, Inc.
J.M. Owens

Laucks

Testing Laboratories, Inc.

940 South Harney Street. Seattle, Washington 98108 (206) 767-5060

Chemistry, Microbiology, and Technical Services

Certificate

CLIENT Hart Crowser & Associates, Inc.
1910 Fairview Avenue East
Seattle, WA 98102

LABORATORY NO. 74187

DATE August 13, 198[illegible]

REPORT ON SOIL

SAMPLE INDENTIFICATION

Marked:

1) 1039-01 B1 52 2.5-4 11/11/14
2) 1039-01 B1 54 7.5-9 7/8/8
3) 1039-01 B1 57 15-16.5 3/6/13
4) 1039-01 B2 52 2.5-4 3/6/9
5) 1039-01 B2 54 7.5-9 3/3/5
6) 1039-01 B2 55 10-11.5 6/8/9

TESTS PERFORMED AND RESULTS

mg/kg, dry basis

	1	2	3	4	5	6
Gravimetric Oil & Grease	2,600	3,900	230	110	330	160

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J. M. Owens

J. M. Owens

JMO:bg

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Testing Laboratories, Inc.
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Chemistry. Microbiology. and Technical Services

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CLIENT Port of Seattle
P.O. Box 1209
Seattle, WA 98111
ATTN: Doug Hotchkiss

LABORATORY NO. 87823

DATE Jan. 25, 19

P-03650

REPORT ON WATER

SAMPLE IDENTIFICATION

Samples were submitted by Wally Trial of Parametrix on 12/14/84 and were identified as shown below:

TESTS PERFORMED AND RESULTS:

1) 1 B101 W. Trial 12/14 10:15 D. Hotchkiss
2) 2 B102 W. Trial 12/14 12:00 D. Hotchkiss

	1	2
	parts per million (mg/L)	
5-Day Biochemical Oxygen Demand	20.	25.
Dissolved Chemical Oxygen Demand#	38.	62.
Dissolved Organic Carbon#	18.	27.
Total Dissolved Volatile Solids#	100.	160.
Nitrate + Nitrite	0.010	0.014
Ammonia as N	2.9	5.1
Ortho-Phosphate#	0.21	0.51
Specific Conductance	560.	680.
Hydrogen Sulfide	0.3	2.1
Oil & Grease by IR	3.0	7.0

Samples were analyzed for priority pollutants in accordance with 40 CFR, Part 136, with results as shown below:

Inorganics	parts per billion (ug/L)	
Dissolved Antimony#	L/5.	L/5.
Dissolved Arsenic#	L/5.	L/5.
Dissolved Beryllium#	L/5.	L/5.
Dissolved Cadmium#	L/1.	L/1.
Dissolved Chromium#	L/2.	3.
Dissolved Copper#	5.	2.
Dissolved Lead#	L/5.	9.
Dissolved Mercury#	L/1.	L/1.
Dissolved Nickel#	L/5.	L/5.

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	1	2
	parts per billion (ug/L)	
Dissolved Selenium#	L/5.	L/5.
Dissolved Silver#	L/1.	L/1.
Dissolved Thallium#	L/5.	L/5.
Dissolved Zinc#	7.	10.
Total Cyanide	85.	16.
Total Phenol	10.	59.

Volatile Organics (by GC/MS)

	1	2	Field Blank
	parts per billion (ug/L)		
Chloromethane	L/1.	L/1.	L/1.
Bromomethane	L/1.	L/1.	L/1.
Vinyl Chloride	L/1.	L/1.	L/1.
Chloroethane	230.	150.	L/1.
Methylene Chloride	tr	tr	L/1.
Acrolein	L/10.	L/10.	L/10.
*Acetone	tr	16.	19.
Acrylonitrile	L/10.	L/10.	L/10.
*Carbon Disulfide	L/1.	L/1.	L/1.
1,1-Dichloroethylene	L/1.	L/1.	L/1.
1,1-Dichloroethane	23.	28.	L/1.
trans-1,2-Dichloroethylene	L/1.	L/1.	L/1.
Chloroform	L/1.	L/1.	L/1.
*2-Butanone	L/1.	L/1.	L/1.
1,2-Dichloroethane	L/1.	L/1.	L/1.
1,1,1-Trichloroethane	L/1.	L/1.	L/1.
*Vinyl Acetate	L/1.	L/1.	L/1.
Bromodichloromethane	L/1.	L/1.	L/1.
Carbon Tetrachloride	L/1.	L/1.	L/1.
1,2-Dichloropropane	L/1.	L/1.	L/1.
Trichloroethylene	L/1.	L/1.	L/1.
Benzene	L/1.	L/1.	L/1.
Chlorodibromomethane	L/1.	L/1.	L/1.

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	1	2	Field Blank
	parts per billion (ug/L)		
1,1,2-Trichloroethane	L/1.	L/1.	L/1.
2-Chloroethyl vinyl ether	L/1.	L/1.	L/1.
Bromoform	L/1.	L/1.	L/1.
*4-Methyl-2-pentanone	L/1.	L/1.	L/1.
*2-Hexanone	L/1.	L/1.	L/1.
1,1,2,2-Tetrachloroethane	L/1.	L/1.	L/1.
Tetrachloroethylene	L/1.	L/1.	L/1.
Toluene	L/1.	L/1.	L/1.
Chlorobenzene	L/1.	L/1.	L/1.
trans-1,3-Dichloropropene	L/1.	L/1.	L/1.
Ethylbenzene	L/1.	L/1.	L/1.
cis-1,3-Dichloropropene	L/1.	L/1.	L/1.
Styrene	L/1.	L/1.	L/1.
o-Xylene	L/1.	tr	L/1.
**Cyclohexane	43.	11.	L/1.
**Methylcyclopentane	63.	10.	L/1.
**2-Methylbutane	18.	L/1.	L/1.

Extractables (by GC/MS)

	1	2
	parts per billion (ug/L)	
N-nitrosodimethylamine	L/1.	L/1.
Bis(2-chloroethyl)ether	L/1.	L/1.
2-Chlorophenol	L/1.	L/1.
Phenol	L/1.	L/1.
1,3-Dichlorobenzene	L/1.	L/1.
1,4-Dichlorobenzene	L/1.	L/1.
1,2-Dichlorobenzene	L/1.	L/1.
Bis(2-chloroisopropyl)ether	L/1.	L/1.
Hexachloroethane	L/1.	L/1.
N-nitroso-di-n-propylamine	L/1.	L/1.
Nitrobenzene	L/1.	L/1.
Isophorone	L/1.	L/1.

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	1	2
	parts per billion (ug/L)	
2-Nitrophenol	L/1.	L/1.
2,4-Dimethylphenol	tr	13.
Bis(2-chloroethoxy)methane	L/1.	L/1.
2,4-Dichlorophenol	L/1.	L/1.
1,2,4-Trichlorobenzene	L/1.	L/1.
Naphthalene	L/1.	tr
Hexachlorobutadiene	L/1.	L/1.
4-Chloro-m-cresol	L/1.	L/1.
Hexachlorocyclopentadiene	L/1.	L/1.
2,4,6-Trichlorophenol	L/1.	L/1.
2-Chloronaphthalene	L/1.	L/1.
Acenaphthylene	L/1.	L/1.
Dimethylphthalate	L/1.	L/1.
2,6-Dinitrotoluene	L/1.	L/1.
Acenaphthene	L/1.	L/1.
2,4-Dinitrophenol	L/1.	L/1.
2,4-Dinitrotoluene	L/1.	L/1.
4-Nitrophenol	L/1.	L/1.
Fluorene	L/1.	L/1.
4-Chlorophenyl phenyl ether	L/1.	L/1.
Diethylphthalate	L/1.	L/1.
4,6-Dinitro-o-cresol	L/1.	L/1.
1,2-Diphenylhydrazine	L/1.	L/1.
4-Bromophenyl phenyl ether	L/1.	L/1.
Hexachlorobenzene	L/1.	L/1.
Pentachlorophenol	L/1.	L/1.
Phenanthrene	L/1.	L/1.
Anthracene	L/1.	L/1.
Dibutylphthalate	L/1.	L/1.
Fluoranthene	L/1.	L/1.
Pyrene	L/1.	L/1.
Benzidine	L/1.	L/1.
Butyl benzyl phthalate	L/1.	L/1.
Benzo(a)anthracene	L/1.	L/1.
Chrysene	L/1.	L/1.
3,3'-Dichlorobenzidine	L/1.	L/1.

Port of Seattle

	1	2
	parts per billion (ug/L)	
Bis(2-ethylhexyl)phthalate	12.	40.
N-nitrosodiphenylamine	L/1.	L/1.
Di-n-octyl phthalate	13.	tr
Benzo(b)fluoranthene	L/1.	L/1.
Benzo(k)fluoranthene	L/1.	L/1.
Benzo(a)pyrene	L/1.	L/1.
Indeno(1,2,3-cd)pyrene	L/1.	L/1.
Dibenzo(ah)anthracene	L/1.	L/1.
Benzo(ghi)perylene	L/1.	L/1.
2,3,7,8-Tetrachlorodibenzo-	L/1.	L/1.
p-dioxin (TCDD)	L/1.	L/1.
*Aniline	L/1.	L/1.
*Benzoic Acid	L/1.	L/1.
*Benzyl Alcohol	L/1.	L/1.
*4-Chloroaniline	L/1.	L/1.
*Dibenzofuran	L/1.	L/1.
*2-Methylnaphthalene	L/1.	L/1.
*2-Methylphenol	L/1.	L/1.
*4-Methylphenol	L/1.	L/1.
*2-Nitroaniline	L/1.	L/1.
*3-Nitroaniline	L/1.	L/1.
*4-Nitroaniline	L/1.	L/1.
*2,4,5-Trichlorophenol	L/1.	L/1.
**2,3-Dimethylphenol	L/1.	22.
**Phenol, 2-(1-Methylethyl)-	L/1.	260.

Pesticides (by GC/ECD)

alpha-BHC	L/0.1	L/0.1
beta-BHC	L/0.1	L/0.1
delta-BHC	L/0.1	L/0.1
gamma-BHC (lindane)	L/0.1	L/0.1
heptachlor	L/0.1	L/0.1
aldrin	L/0.1	L/0.1
heptachlor epoxide	L/0.1	L/0.1

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Testing Laboratories, Inc.
940 South Harney Street, Seattle, Washington 98108 (206) 767-5060
Chemistry, Microbiology, and Technical Services

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LABORATORY NO. 87823

	1	2
	parts per billion (ug/L)	
dieldrin	L/0.1	L/0.1
4,4'-DDE	L/0.1	L/0.1
4,4'-DDD	L/0.2	L/0.2
endosulfan sulfate	L/0.2	L/0.2
4,4'-DDT	L/0.2	L/0.2
chlordane	L/0.2	L/0.2
alpha endosulfan	L/0.1	L/0.1
beta endosulfan	L/0.1	L/0.1
endrin	L/0.2	L/0.2
endrin aldehyde	L/0.2	L/0.2
toxaphene	L/4.0	L/4.0
PCB 1016	L/1.0	L/1.0
PCB 1221	L/1.0	L/1.0
PCB 1232	L/1.0	L/1.0
PCB 1242	L/1.0	L/1.0
PCB 1248	L/1.0	L/1.0
PCB 1254	L/1.0	L/1.0
PCB 1260	L/1.0	L/1.0

Key

L/ = "less than".
= Samples were filtered through .45 micron filter prior to preservation and analysis.
* = Additional compounds from the EPA's Hazardous Substances List.
** = Other compounds of interest identified.

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J.M. Owens

J.M. Owens

cc: Wally Trial

JMO:veg

Laucks
Testing Laboratories, Inc.
940 South Harney Street, Seattle, Washington 98108 (206) 767-5060
Chemistry, Microbiology, and Technical Services

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LABORATORY NO. 87823

APPENDIX

Surrogate Recovery Quality Control Report

Listed below are surrogate (chemically similar) compounds utlized in the analysis of volatile and organic compounds. The surrogates are added to every sample prior extraction and analysis to monitor for matrix effects, purging efficiency, and sample processing errors. The control limits represent the 95% confidence interval established in our laboratory through repetitive analysis of these sample types.

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
Field Blank	d4-1,2-Dichloroethane	50.0	53.7	107.4	77-120
	d8-Toluene	50.0	51.4	102.8	86-119
	p-Bromofluorobenzene	50.0	51.8	103.6	85-121
1	d4-1,2-Dichloroethane	50.0	53.1	106.2	77-120
	d8-Toluene	50.0	50.7	101.4	86-119
	p-Bromofluorobenzene	50.0	53.8	107.6	85-121
2	d4-1,2-Dichloroethane	50.0	51.4	102.8	77-120
	d8-Toluene	50.0	51.0	102.0	86-119
	p-Bromofluorobenzene	50.0	53.8	107.6	85-121

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940 South Harney Street, Seattle, Washington 98108 (206) 767-5060
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Port of Seattle

LABORATORY NO. 87823

parts per billion (ug/L)

Sample No.	Surrogate Compound	Spike Level	Spike Found	% Recovery	Control Limit
1	2-Fluorophenol	101.5	58.0	57.1	23-121
	2-Fluoroaniline	51.0	17.8	34.9	---
	d5-Phenol	101.5	65.1	64.1	15-103
	2-Bromophenol	101.4	87.8	86.6	---
	d5-Nitrobenzene	51.0	22.5	44.1	41-120
	2-Fluorobiphenyl	50.4	48.1	95.4	44-119
	2,4,6-Tribromophenol	101.5	112.5	110.8	10-130
	d14-p-Terphenyl	50.8	58.5	115.2	33-128
2	2-Fluorophenol	101.3	100.6	99.3	23-121
	2-Fluoroaniline	50.9	13.5	26.5	---
	d5-Phenol	101.3	86.7	85.6	15-103
	2-Bromophenol	101.2	131.6	130.0	---
	d5-Nitrobenzene	50.9	24.1	47.3	41-120
	2-Fluorobiphenyl	50.3	52.4	104.2	44-119
	2,4,6-Tribromophenol	101.3	127.3	125.7	10-130
	d14-p-Terphenyl	50.7	57.5	113.4	33-128

A1.2 Methodology for Defining Part A Waste Categories

The quantities associated with waste codes reported on the Part A have been grouped into various wastestream categories. This grouping of waste codes has been adopted to avoid duplicate counting of quantities associated with wastestreams which are designated with more than one waste code.

In order to avoid this misrepresentation and to provide the most accurate estimates of the types and quantities of wastes received, it was determined that categorizing the waste codes based on chemical wastestream groups provides the most complete information about the wastestreams handled.

The wastestream categories used in the Part A were based on the categories and corresponding waste codes for the most common wastestreams historically received at the Pier 91 Facility. These waste categories and corresponding quantity estimates are summarized in Table A1-2.

TABLE A1-2. TYPES AND QUANTITIES OF DANGEROUS WASTES LISTED ON THE PIER 91 FACILITY PART A

WASTE CATEGORY[a]	ESTIMATED ANNUAL QUANTITY (LBS/YR)
Oil and Coolant Emulsions	100,000,000
Industrial Wastewaters including Alkalis	80,000,000
Industrial Waste Sludges	6,000,000

(a) Waste categories derived from facility operating history.